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ABSTRACT

In an effort to create a multilevel, interactive, and hypothesis-based model of the reading comprehension process that bridges interdisciplinary gaps in the theory of learning, this report focuses on descriptions of cognitive processes developed in the fields of cognitive psychology, artificial intelligence, sociolinguistics, linguistics, and reading education. The report first discusses the need to combine the hierarchical, bottom-up, sequential learning framework with the heterarchical, top-down, nonlinear creative model for reading, and to apply reality testing to both. It then describes how chunks of knowledge are connected and bracketed for meaning through such "chaining" activities as word recognition, syntactic processing, and semantic processing. After suggesting the contextual component rendered by the reader in comprehension, it indicates parallels between reading comprehension and research: in both, configurations of schemata are developed by identifying, recognizing, accessing, and organizing information. Finally, the report discusses the bracketing process in greater detail, suggesting reasons why it may fail to occur, how it aids recall, and what makes it a creative act. Definitions of terms used are appended. (MM)

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HOW MEANING IS BORN

by

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HOW MEANING IS BORN

Introduction

My thesis is generically simple, yet theoretically highly complex. It is stated brilliantly by Dr. Elliot W. Eisner, Stanford University: Children do not write--because they cannot spell--they do not write because they have nothing to say (Eisner, 1981).

The purpose of this presentation is to call to attention those aspects of schooling and reading which go unnoticed because they are taken for granted. The thoughts of Eisner will be used to bridge the interdisciplinary gaps in theories of learning--especially theories about learning to read. I will weave a multitude of diverse and complex issues, methodologies, and normative interactions to arrive at an adequate description of the major theories, tied to my own background knowledge and interests. The "expressive outcomes," hopefully, will give some imaginative explorations into the "mind altering" aspects of schooling and learning (Eisner, 1982).

Eisner (1978) asks a very provocative question; namely:

> ...what kind of cognitive processes are used in reading and how do these processes compare to those used to secure meaning from visual images? To what extent do these processes overlap, and what is the nature of their differences? What are the means through which content is conveyed in text and in visual art, and is one form better suited to some kinds of content than others? If people do in fact read visual images, then how do they secure information from them and why do advertisers spend such large sums to get their messages across to the public through the visual images used in television, film, newspaper, and magazines?

The questions Eisner asks are crucial to understanding how and why children have problems learning to read--for there are many ways to read--

and to relate words and meanings, in context, to their worlds outside the school. There are varieties of expressive modes and symbol systems in our cultures. Cognition and background knowledge acquisition is critical to understanding ways children construct and create meanings in life. The ultimate goal of READING COMPREHENSION ought to be that of addressing the "virtual vacuum in the study of reading as a generic human ability on the one hand, and the specific demands of content on the other" (Eisner, 1978). Eisner (1978) further articulates that:

> ...reading, whether it be that of human behavior, modern painting, physics, history, or poetry, requires not only the ability to exercise the imagination, it also requires a knowledge of the codes and context within which the particular material to be read participates.

Eisner (1978) sums up the final challenge undertaken in this paper:

> What is needed is an approach to reading that conceptualizes reading as the generic process through which humans make meaning, that examines the psychological processes through which such meanings are made, and which takes into account in such inquiry the unique features of the symbol systems in which such meanings are couched. To conceive of reading as limited to text is to disregard our intuitive recognition that the construction of meaning from the perception of patterned stimuli is ubiquitous in human life and a skill necessary for survival. To study psychological processes as though they could operate without a specific content is to embrace a belief that is a logical impossibility. Content and process are two sides of the same coin... Thus, there occurs an interaction between linquistically conceptual and qualitatively conceptual material...Out of this interaction meaning from reading is born.

Using the interdisciplinary approaches which focus on COGNITIVE PROCESSES involving "cues" (Goodman, 1973) "non-visual information" (Smith, 1971) and "visual competence" (Eisner, 1972), rather than discussing the narrower limits which move from symbols to sounds and

from spoken to written words, I hope to breathe new life into the imaginative capacities of theorists, teachers, specialists, and administrators who have knowingly or unwittingly defined the problem far too narrowly. I speak not as a reading specialist, but as a concerned educator, evaluator of educational programs, and curriculum specialist, as well as a sociological researcher.

The cognitive processes, for purposes of the assumptions contained in this paper, include cognitive psychology, artificial intelligence (such as computer assisted learning), sociolinguistics (i.e., the ethnography of language), as well as linguistics, and reading education, comprehension and the birth of meaning.

The basic overall assumption underlying this presentation is that "skilled reading is the process of comprehending the meaning of connected discourse and that it involves far more than simply chaining together the meanings of a string of decoded words" (Spiro, et al., 1980).

Experts include the following elements as important foci in reading comprehension: "main ideas, understanding the sequence of events, recognizing the author's purpose, and drawing inferences" (Spiro, et al, 1980). The foci seem reasonable, yet we still don't know how children learn to read. Therefore, how do we know what to do to assist them? "The surprise may be not that some children have difficulty in learning to read, but that any learn to read at all" (Spiro, et al., 1980).

There is a consensus among the most knowledgeable theorists in reading comprehension that an adequate model of reading comprehension ought to contain three essential ingredients. The model must be multi-level, interactive, and hypothesis based. The model proposed will be embedded

with these three characteristics as well as the obvious knowledge structures which are active and multileveled; namely, orthographic (sight), phonological (sound), lexical (structural), syntactic (sentence construction) and semantic (meaning of speech forms). The above phrases or single word descriptors are purposefully oversimplified.

These practical considerations related to the teaching of reading will be intertwined with the cognitive processes necessary to successfully allow meaning to be born from the inside out--just as artistic forms and representations are born--thus producing micro/macro and private/public level views of mental processing and acquisition of background knowledge adequate to perform the creative process. Here we face a great dilemma! We are told that reading is hierarchical, linear, sequential, and can be broken down into discrete letters and sounds. Most reading in the past consisted of bottom up rather than top down instruction. This means that such taxonomies as Bloom's cognitive, Krathwohl's affective, and Masai's psychomotor domains, as well as developmental learning approaches, subscribe to the aforementioned linearity and hierarchical, developmental processes. These approaches are highly deterministic (Muro and Dinkmeyer, 1977). There is a need for sequential developmental skills, but must we subscribe only to developmental learning per se?

Questioning the developmental concept is necessary because the developmental concept eliminates the "creative cognitive processes"--such as in the arts; and reading can be considered an art. Predetermination of outcomes is forthcoming when such a narrow view of reading comprehension is prescribed.

Therefore, it is important to point out that to encompass both the sequential learning conceptual framework (i.e., basic skills development in linear and sequential ways), and to retain the creative process, a new model had to be constructed wherein the micro/macro and private/public perspectives are brought into the goodness of fit (i.e., reality testing

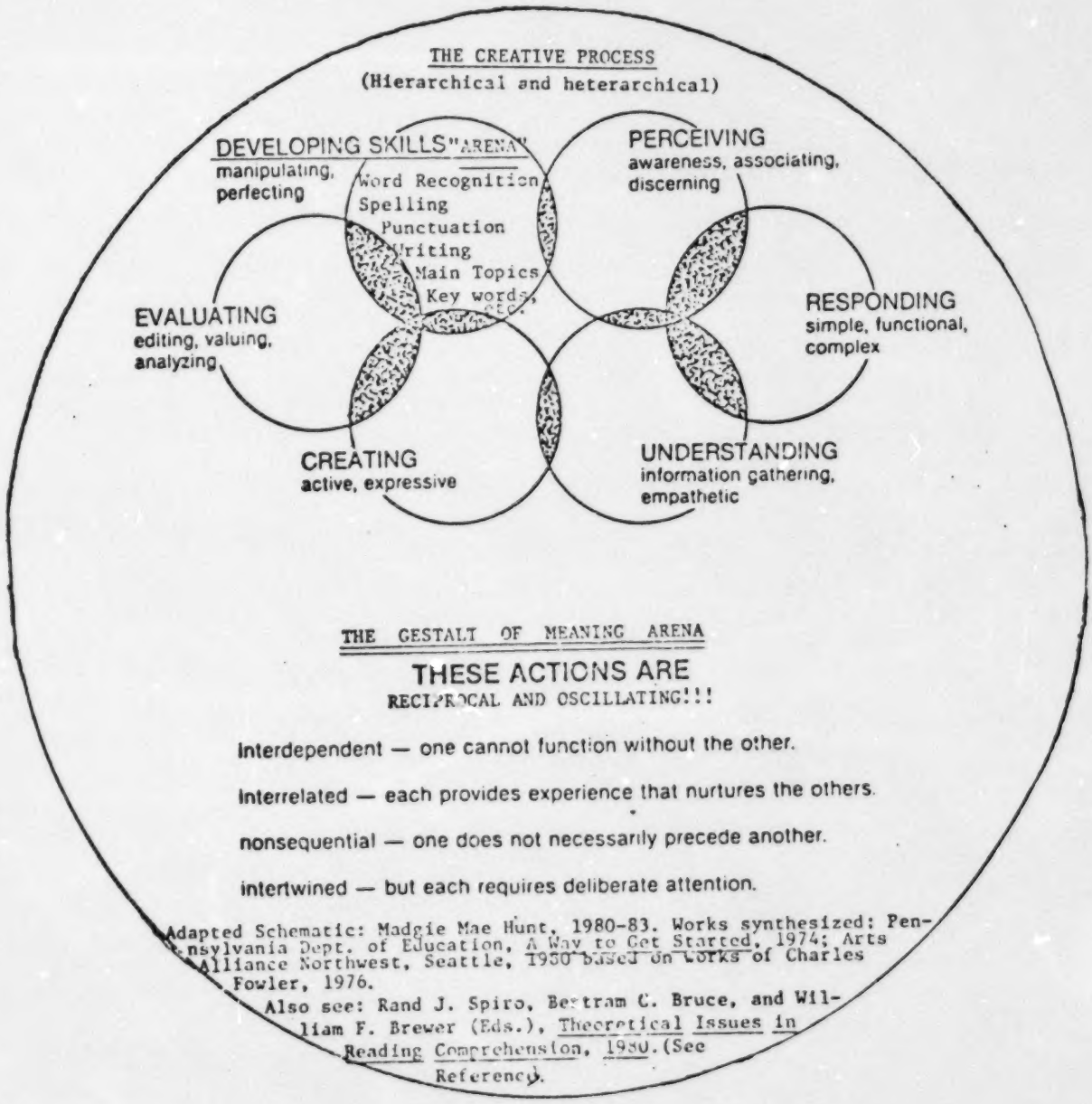
and hypothesis testing) format applied in our practical everyday lives. If we feel a sense of comfort with an interpretation of an occasion or event, we allow it to stand and become a part of our frame of reference. If we feel it just doesn't quite feel right, we discard the interpretation as we would any other outsider trying to invade our inner arena of events and occasions meant only for those who belong. These sociological/ sociolinguistic/artistic frames of reference are well grounded in the works of Eisner, Goffman, Driessen, Schutz, Simmel, Blumer, Gumperz and Hymes, Mead, Gold, Denzin, Hunt, and the National Right to Read Principals' Reading Leadership Program, 1982. (In process)

The assumption herein is that literal interpretations will not be sufficient to interpret adequately the meanings and nuances of our everyday lives. The reasons are obvious--there is more there than we can see without a "competent eye" (Eisner, 1972).

Refutation of one-way (i.e., bottom up) "mental mobility" now seems a simple matter (Howard Becker, 1938; and Howard S. Becker, 1968). We bring to tasks a preconceived set of notions about the phenomenon. Although we may not necessarily have the exact experiences, we do have experiences which affect our perceptions of reality. We can and do learn more than one thing at a time, unless someone calls it to our attention; at which time, we stop to take note of our discrete mechanical actions and lose sight of the overall meaning which was generic and natural at the outset.

To synthesize a model which encompasses both the micro/macro conceptual framework and the creative process required journeying toward a constant comparative methodology. Continuous interplay was negotiated among "hierarchical" (i.e., linear, sequential, non-interdependent, non-interrelated, non-intertwined) cognitive processes, consisting of the

micro or mechanical aspects of reading comprehension, herein called "the developing skills arena," and the "heterarchical" (i.e., original beginnings in combined forms of meaning; i.e., non-linear, non-sequential, interdependent, interrelated, intertwined, in-process) cognitive processes, consisting of the macro aspects of reading comprehension, referred to herein as "the Gestalt of meaning arena." The following micro-macro synthesis presents the union of "hierarchical" and "heterarchical" arenas (Hunt, 1982).



Adapted Schematic: Madgie Mae Hunt, 1980-83. Works synthesized: Pennsylvania Dept. of Education, A Way to Get Started, 1974; Arts Alliance Northwest, Seattle, 1980 based on works of Charles Fowler, 1976.

Also see: Rand J. Spiro, Bertram C. Bruce, and William F. Brewer (Eds.), Theoretical Issues in Reading Comprehension, 1980. (See Reference).

Support can be found in the literature for this position. The following quotation says it well:

> Natural hierarchy running from orthographic knowledge to expectations about discourse structure, communication between these levels is not limited to adjacent members of the hierarchy...the knowledge sources interact in a heterarchical fashion...A visual input progressing linearly through the various knowledge levels to arrive finally at a 'meaning' is not supported here (e.g., Gough, 1972; LaBerge and Samuels, 1974)...Comprehension proceeds from the top down as well as from the bottom up. Comprehension is 'driven' by preexisting concepts as well as by the 'data' from the text (Bobrow & Norman, 1975).

One problem of unskilled readers has been posited as the inability to use and connect one chunk of knowledge to another even more so than absence of specific knowledge within the learner's repertoire. (Spiro, et al., 1980). Testing in schools rewards compartmentalized learning. This is aptly observed by examination of the kinds of tests we construct to assess achievement.

There are three major divisions which constitute a "chaining" processing method referred to in the literature as "word recognition," "syntactic processing," and "semantic processing." These chaining processes are COGNITIVE ACTIVITIES but are organized after OUR SENSES make their presence evident. These SENSORS are facilitated in their interplay by the nature of the depth and richness of our background knowledge and experiences. The greater our knowledge, the more we bring to the interpretation of life and the richer our comprehension of experience and its articulation. Such articulation may be called "thick description" (Hunt, 1975, 1979; Eisner, 1982; Geertz, 1973; Simmel, 1959). The "forms of representation" we select are restricted or enhanced by our knowledge base (Simmel, 1959; Eisner, 1982b). The history of knowledge is described by Karl Mannheim.

> Historically reality can be understood only as an inclusive framework of interrelated activities. Inasmuch as reality is the substance and subject of history, comprehensiveness is one of the criteria of the recount.. we place facts in the comprehensive framework of those continuous functions which give life duration. The subject remains the same--life--although the focus of selective attention may vary. In short, any array of discrete events such as successive inventions or conquests may furnish the descriptive material for the report, but what makes it historical is the comprehensive framework within which the selected material is presented. (Karl Mannheim, 1956)

"Chunks of knowledge" are taken in, reality tested for goodness of fit with our natural hypotheses, and rejected or accepted. Acceptance means that we store these chunks of knowledge through the creative process of BRACKETING (Garfinkel, 1967; Gruber, 1981; Rumelhart and Ortony, 1977; Hunt, 1975, 1979 and 1982a; Driessen, 1969; Gold, 1958). I submit that from the works of Flavell, 1970; Olson, 1973; and Simon, 1974, together with artistic, social science methodologies and sociolinguistics, there is a merging of thought that can assist teachers to become better prepared to help children interpret the written word. The major problem we are facing is "How can we assist learners to overcome problems in the sub-processes of reading without forfeiting the meaning of the text" (Adams in Spiro, et al., 1980). The answer I propose is that of adding the creative process and "the competent eye" (Hunt, 1982a; Eisner, 1972).

METHODOLOGY

We hear experts on reading comprehension use terms such as necessary and sufficient causes. In the model proposed, chaining is a necessary but not a sufficient component for reading comprehension. Chaining is defined best as the "sensing" and "linking" of interrelated "chunks of meanings" simply because they intersect by the very nature of their

connections with concepts in the context of the passage or phenomenon under study. Please keep in mind that the terms passage or phenomenon were used. Reading comprehension has not been restricted solely to the level of the written word or text. "The realms of meaning have many mansions," according to Eisner (Eisner, 1981). The nets we cast determine the fish we capture, in Eisner's words (Eisner, 1972).

An example of syntactic processing by intersections with other concepts in context is the use of the words "chatter, play, and game (Hunt, 1967). The words, out of context, convey several alternative interpretations. Placed in contexts such as the classroom where students are engaged in reading, these words take on negative connotations. Students are not supposed to chatter while reading. We refer to such behaviors as "not being on task." Reading is not something considered to be a "game" we "play." In a baseball "game," however, "chatter" takes on a positive connotation. Chatter is a motivational force for inspiring the pitcher to effect "plays" directed to shut out the success of the opponents, or to give group support and solidarity thereby bringing the tempo and cadence of the "play" and the "game" to exhilerating expressive and cognitive heights. There is a complex talk, talkaction, and coordinated cooperative effort which develops creatively as one "play" between the dyad of pitcher and catcher evolves, using coded sign language, which then moves to a triad bringing in the first baseman or other fielders. Movement from "private experience" to "public forms of representation" are identical to the formal interactions in a baseball game (Simmel, 1959; Hunt, 1967, 1975, 1982). One might liken this process of linking chatter, play, and game to the context in which they are used to arrive at their unique meanings, at that moment in a specific setting, to food hunting practices. Banging on loud drums and gongs to drive the game ahead of the hunters in tribes where food sources depend on such "chatter" and "play"

from the hunters when stalking the "game" is an apt analogy.

In sociolinguistics, the works of Gumperz and Hymes (eds), 1972; Driessen. 1982; Hunt, 1975, 1982b, Burns, 1982; and Kaplan, 1981, 1982, vividly portray the aforementioned contextual and syntactical/analogical character of life. Edward Rose describes the world as "consisting of both people and things and it is the task of the ethno-inquirer to try to sort them out"(Rose, 1982). Both the speaking and the silent worlds are a part of the empiricism of this approach. Eisner and other experts agree that visual media such as films, photography, paintings, and the meanings they convey are characterized by their diversity. There is a vastness to the dimensions for inquiry. The chunks of knowledge and concepts which must be LINKED, and thereafter BRACKETED, to make sense of the NATURAL HYPOTHESES TESTING in everyday life become believable, understandable, and comprehensible only when the relationships between people, their interpretations and perceptions are unified with the "things" they relate to in their worlds. Imagery from the minds of the critical eye of the participants and/or observers of events, occasions, and visual arrays of objects are made available and sharable through conversations about the taken-for-granted aspects of the world. Things taken for granted are often neglected (Schutz, 1967, 1964, 1966; Harrod, 1981). When contemplating curriculum development, perceptual enhancement, and unique forms of expression, one is reminded of the "null curriculum" of which Eisner speaks. How is it that we learn more than we know we are learning? How do we make more sense out of learning to read than we know we are making? Rose says that we ought to be concerned with:

> ...the history of usages of words that point to uniformities and changes in wordly treatments and arrangements of worldly things. The ethno-inquiries must not only study people and things immediately present in any arena of human activity in the here and now. It must also be concerned with realities embedded in the world at a distance, and with how people treat things that stand at a distance from them in space and time. Actualities, things dealt

> with close at hand, and realities, things treated by people as real, however they may be distantly extended, are two great objects of inquiry undertaken by the world itself. Those objects and the play between them can then be major concerns in an ethno-inquiry undertaken by scholars. It has been suggested that that inquiry be called ethnonomy, study of the arrangements that people themselves make and that people themselves find holding between themselves and among worldly things. The ethno-inquiries of scholars are made possible by the ethno-inquiries of people in the world (Rose, 1982).

Chales Kaplan speaks of the empirical base for ethno-inquiry and the importance given to the necessity that "theory be strongly bound with the SENSES of the people studied"(Kaplan, 1982). Theory is a thing to be discovered by analyzing the "talk" of people involved in the flesh and blood of experience.

Syntactic processing by chaining and/or linking concepts and constructs together where they intersect is the primary method used to arrive at the intended relationships between words, sentences, topics, concepts, and constructs. Before BRACKETED CHUNKS OF KNOWLEDGE can be meaningfully stored within the mind of a learner, an empirical referent for that imagery must be present in the world, or within the realm of the imagination of the student. Syntax assists in making word recognition and the above chaining and bracketing processing easier by removing the ambiguity from the unknown, and with an appropriate referent, changing the unfamiliar into the familiar (Eisner, 1981). We must be cautious about assuming too much in regard to syntax clarity. The spoken word, perfectly understood by the person, may not be recognized or perceived in the identical way when read. Adams, drawing from the works of Henderson, Goldman-Eisler, and Skarbek, 1965 and 1966, says:

> In speech, syntactic boundaries are marked by prosodic cues. When speaking fluently, people tend to restrict pauses and breaths to syntactic boundaries (Spiro, et al., 1980).

These syntactic boundaries and prosodic cues shall be included in the category of CHAINING TECHNIQUES. In written text, these chaining boundaries are not as easily discerned by the young reader. The temporal and prosodic cues may not be clear. Syntax may be clouded. "...processing differences between reading (i.e., discovering) and listening (i.e., where prosodic cues are given) do indeed extend beyond the level of word recognition" (Adams in Spiro, et al., 1980). Emphasis mine. One is reminded of the late Marshall McLuhan at this point. "The medium is the message." Cromer, 1970, has shown that demarcating phrasal boundaries can help comprehension with poor readers. We desire to communicate.

A bracketed story told by a retiring superintendent points to our creative, natural desire to play with decoding. He said when he was a child there weren't such technological approaches as tachistoscopically induced procedures for improving reading. However, there was a natural technique--a lightening storm when he lay in bed. His cabin was wallpapered with newsprint. He and his brothers would see how many words of print they could decode during the short span of the lightening flash. Again, maybe the ethno-inquirers may be right about the unique yet natural generic abilities of persons in the life. A naturalistic approach to reading is an appealing idea (Schatzman and Strauss, 1973; Nisbet, 1966; Weber, 1947; Rogers, 1969; Malinowski, 1954).

As teachers, we can distinguish at the lexical (word recognition) level if readers don't know the word; but not so at the syntactical (meaning) level. When students, according to Adams, move from simple

sentences to higher levels of complexity in text--where they are "reading to learn" rather than "learning to read," they may not be able to formulate a syntactic structure which can be CHAINED and later BRACKETED. What is worse, they may not even know they aren't able to do it (Adams in Spiro, et al., 1980).

The discovery that the research methodologies, which have been synthesized in this paper, parallel the frames of reference of those classified as "intentionalists" was reassuring. The intentionalists' theoretical orientation is detailed as follows:

> Text structure is an area of study which now may include sociolinguistics [i.e., the ethnography of language.] The study of language has recently been broken into two broad frames of reference by Morgan and Green, namely, the 'formalist position,' which treats linguistic structures as abstract formal objects to be studied in isolation, and the 'intentionalist position,' which treats linguistic structures as devices used by speakers or writers to convey their intentions to hearers or readers (Spiro, et al., 1980). Emphasis mine.

THE SIGNIFICANCE OF CONTEXT

The literal meanings of isolated words and sentences must be taken in CONTEXT to derive intended meanings. Analysis of speech acts or written accounts must be analyzed at HIGHER LEVELS OF GENERALITY. If you will look at the terms and definitions (See Appendix A), you will see the interpretive processes included in these higher levels of perception.

Often used terms are <u>plot</u>, <u>discourse force</u> (e.g., the perception of the reader of the intent of the author), and <u>rhetorical strategies</u> e.g., the readers are to ascertain the underlying meanings of written discourse from the "surface linguistic information"(Brewer in Spiro, et al., 1980). The point is that <u>the writer's intentions</u> must be addressed and can be understood only by bringing into play a great many

HIGHER ORDER COGNITIVE PROCESSES. These higher level thinking skills are a necessary and sufficient process for understanding and memory. Recent reviews of experimental works of understanding and memory have rendered some formal qualities:

1. There is a difference in text material and simple lists of sentences related to how these behave.
2. Thematically important elements in a text tend to be recalled best.
3. The understanding and memory of text is strongly influenced by context and the knowledge brought to the text by the reader (Spiro, et al., 1980).

The logical conclusion is that a tremendous oscillation between top-down and bottom-up processing occurs. You will recall that top-down processing is non-linear, unlike Blooms's taxonomy from bottom level of "knowledge" upward.

When reading, reality testing for comprehension and meaning requires that learners engage in linking sentences together incrementally and sequentially, in context, to arrive at the "Gestalt of the passage," thus accepting each sentence as a part of the whole of the emerging discourse.

Now comes the crucial question for teachers. If the meaning of discourse goes beyond the explicit language being spoken, have you wondered where the rest of the meaning comes from? We do make sense of our speech acts and conversations. We create them as we speak. THIS IS A CREATIVE, CONSTRUCTIVE PROCESS which allows us to say things implicitly. Discourses are passed from one to the other and comprehended with great uniformity and consistency. The area of social science which deals with this phenomenon is referred to as Symbolic Interactionism (Mead, 1934; Blumer, 1969).

What goes before or after a sentence or word shapes our interpretations of the meanings we construct. Communicating requires more of us than the literal words and sentences themselves. This requirement is referred to

as "extra-textual construction." A time and space variable enters at this point. The purpose of the message is affected by the nature of the situation and the background knowledge of both the reader and the hearer (Spiro, et al., 1980).

The knowledge you bring to what is being said here and now, compared with the knowledge which is actually being imparted, is a significant variable affecting the knowledge you will take with you from reading this article. Factors such as style of presentation, the context, the perceived situation, and your definition of that situation, your interests, attitudes, and your preexisting knowledge impact on your comprehension and interpretations. There is a CONTEXTUAL COMPONENT THAT YOU MUST RENDER!

What we hear and what is literally being stated may not truly fit. I often quote from Helen Keller to inspire teachers with little preparation in the arts to become more efficacious, i.e., "Life is either a daring adventure or it is nothing!" When the name of Helen Keller is mentioned, research has shown that persons generally read into the statement that "she was deaf, dumb, and blind" (Spiro, et al., 1980). We infer from what is directly stated things which are not implied and are unique to our own personal knowledge background and life experiences.

TO SUMMARIZE: Reading comprehension requires: 1) that we define and view our world in context; 2) that we have adequate background knowledge to perceive and respond to our world in a variety of modes and levels of abstraction; 3) that we develop the basic skills necessary to access, classify, understand, combine data consisting of information from all varieties of discourse. We make LINKAGES and BRACKET these specific memories and contextual chunks of knowledge for recall when needed for problem solving or aesthetic appreciation; 4) that we use this knowledge for creating "new forms of anticipation and enhanced perceptual fields" (Eisner, 1979). In this way, we construct our world, therefore, we can

change it (Blumer, 1969; Hunt, 1982a). We are the architects of our own creation (Eisner, 1979; Blumer, 1969).

It seems to surprise people that the semantic processing discussed at great length by reading experts parallels the research act steps. The basis for this statement is drawn from work related to curriculum development for the supposedly academically gifted/talented (Hunt, 1979-80). The "heterarchical" processes as opposed to the "hierarchical" processes to curriculum and instruction were left out of the curriculum process. You will recall that I defined "heterarchical" as combining forms of meaning.

Using the prior "baseball game analogy," a model of necessity static rather than dynamic, was constructed to compare the variety of taxonomies--i.e., cognitive, affective, psychomotor, values clarification, language development, the creative process, personal interest, concepts of consumer/producer, enrichment/creativity factors, higher level thinking skills, and the research act. As sections were added to the model, it is understandable why Treffinger and I did something about the active force of creativity. We placed creativity as a major category in Bloom's cognitive taxonomy. Bloom included creativity as a subcategory of synthesis. The crucial role of the SENSES, emotional content, and expressive needs of both teachers and students must be recognized. It is as if we have never truly developed OUR reading comprehension to the point where we are Coming to Our Senses (The Arts, Education, and Americas Panel, 1977).

CREATIVITY, THEMATIC CURRICULUM DEVELOPMENT, SEMANTIC PROCESSING AND THE RESEARCH ACT

A complete detailed comparison of parallel terminology and instructional steps and language of the research act used in ethno-inquiry, synonomous with reading comprehension, has been developed by the writer. For now, one example from that data will be rendered to make the point.

SP (semantic processing) STEP 1: Pick out phrases and clauses and arrange into meaningful complete sentences. These are referred to as "sentence structure."

RA (research act) STEP 1: Pick out phrases and clauses and underline in the text. These are referred to as "indexical expressions."

There are many parallels between learning to read and learning to accomplish meaningful research. The purpose of this procedure, presented in the example above, is to meld theory and practice which renders a new approach for the birth of meaning. The first requirement for understanding part/whole relationships and chaining them together is to assist the learner in acquiring schema. A schema is learned for the nose, eyes, mouth, ears, hair, and when the parts are put together, we have a face. If you were asked to identify a well known performer who has an extraordinary singing voice, as well as an unusual nose, and the person is female, what would you say? To date, no one has missed --Barbra Streisand! Schemata are data structures for representing the generic concepts stored in memory, according to current reading research (Spiro, et al., 1980). We acquire our repertoire of schemata and "talking stock" (Hunt, 1967) through experience.

SUMMARY CONCLUSIONS FROM COMPARING THE CREATIVE PROCESS, READING COMPREHENSION, AND THE RESEARCH ACT

The accomplishment of the STEPS in reading comprehension parallels the STEPS of the research act very closely. The research act is a creative process. In fact, configurations of schemata developed by identifying, recognizing, accessing, and organizing or classifying sub-categories of schemata, visual or textual, are undertaken by all of us every moment of our lives. We do this without difficulty.

When we have accepted into our natural hypotheses the groupings of schema which seem to fit our needs for comprehension and understanding,

we get an additional bonus. The constellations of schemata provide an understanding of both the cognitive and affective which extend beyond the content we bring to it. Have you ever kept yourself awake, when you really wanted to sleep, because a particular idea kept running through your mind? You just couldn't let go until it fit together? Our imaginative powers take us far beyond our present reality. Our perceptions of events and textual materials are thus infinitely extended. This ability for extending beyond, "enhances our perceptual fields" and assists us in "developing new forms of anticipation" (Eisner, 1979).

The CHAINING process in reading comprehension, the research act, together with bracketed chunks of knowledge, give opportunities for imaginative and intuitive leaps which can render "thick description" (Geertz, 1973). Such descriptions may get blurred in the creative process. We may not be able to separate our senses from our cognition.

When we arrive at this point, we ought to be pleased because the creative process enters. The creative process is one of: perceiving, responding, understanding, developing skills, creating, and evaluating. These actions are "heterarchical" and occur all at once. How do we teach something which cannot actually be taught but must be learned all at once? This has been the problem with the teaching of reading. The transfer of the process which allows people to produce "new forms of anticipation and enhanced perceptual fields" (i.e., the creative act) has been stifled because we have spent so much time overlooking the simple fact that "learning is the discovery of personal meaning" (Combs, 1962; Hunt, 1979).

The creative process, like schema-driven processes are active endeavors. Both aforementioned processes have a well-defined structure. The structure is built on "blocks of cognition" which come to us first through our sensory systems. The ability to access and retain in memory those things of major

significance for later retrieval assists in problem solving. Creativity depends on efforts expended from within, as well as the assistance given by knowledgeable teachers. Synaptic linking--the leaps of faith, intellectual or intuitive from the "hierarchical" to the "heterarchical" processes effects a "Gestalt of meaning" (Hunt, 1982a, 1982b; Eisner, 1982c; Spiro, et al., 1980).

If we desire to defend the schemata theorists, we must be able to explain how we access this information and how we know when to use it. One explanation is that knowledge is stored in fragmented form within chunks of knowledge which we BRACKET. To bracket is to construct and refine from stored data. We uniquely assemble the schemata at our disposal in any form we desire. This is the CREATIVE ACT of constructing our worlds in social interaction with others and our environment. We assess our situation in the world (Mead, 1934; Blumer, 1969; Gold, 1958; Driessen, 1969; Eisner, 1978, 1981, 1982a, 1982b, 1972); Goffman, 1959; Becker, 1968; Gumperz and Hymes, 1972; Hunt, 1975, 1982a, 1982b).

SIZING UP THE SITUATION

When we speak of "sizing up the situation," we are engaging in "postural scene" comprehension with its attendant "expressive activities" and "expressive outcomes" (Eisner, 1979; Spiro, 1980).

Posturing, used negatively, is behavior displayed by some administrators to justify their inability to effect a desired outcome by being genuine. This necessitates role playing and is often used in conflict management. Positive posturing is a very important skill in that it allows us to model behavior which allows us to initiate a desire on the part of learners to be motivated. If we are, in truth, ON STAGE everyday--imagine the infinity of contexts and creative postures in which we engage. Our background knowledge and experiences come to bear on this storage and retrieval of

norms or rules for interaction (Goffman, 1969). Such flexibility of our knowledge structures and their linkages assist us in recognizing the signals and perceiving situations successfully. The bracketed knowledge we possess constitutes the practical ways we construct natural theories. Patterns and constellations of interrelated schema lay the foundation for our understanding (McGregor, 1960).

I offer a THIRD POSTURING option, namely, artistic posturing, best represented in the works of Eisner and his colleagues at Stanford University. A qualitatively different outcome results when "artistic posturing" enters the supervision of administrators and teachers. The result is "educational criticism" through rich description. (See Appendix A for definitions of artistic posturing in teaching reading and educational criticism.)

The "heterarchical" and the "hierarchical" processes are transferrable from one setting or event to another. These processes are interdisciplinary, cross-cultural, and generalizable.

SCHEMATA AND UNDERSTANDING DISCOURSE

The process of understanding discourse which culminates in a configuration of schemata thereby giving the reader or the listener an adequate account of the STORY being read or spoken, relies on clues from the paragraphs and possible interpretations--instantiations of schemata--i.e., we start off with a general notion of what the discourse says and continuously refine our interpretations as we gain clarity from additional information which we accept or reject. The reader evaluates by comparing successive phrases and sentences in the STORY until a consistent interpretation emerges from the comparative process. Skilled and unskilled readers can be distinguished if their breadth of developed word schemata are compared (Spiro, et al., 1980).

There are three reasons why appropriate schemata are not available for calling forth the BRACKETING PROCESS needed to classify the written text in an understandable way.

1. The appropriate schemata may not be there in the first place.
2. The reader may have the appropriate schemata but the passage does not contain the clues to assist in interpretation.
3. The reader may arrive at a consistent interpretation of the text but it may not be the one the author intended. The content is understood but the intent of the author will not be understood (Spiro, et al., 1980). An example might be the series of steps to accomplish the teaching of reading comprehension; but, as was demonstrated earlier in paralleling the research act and reading comprehension, had you not been told what was being presented, you might have thought the steps were only for reading comprehension.

BRACKETING AS A CONCEPT FOR REMEMBERING

Bracketing, as a concept, assists in understanding, remembering, and calling forth from memory our interpretations of events from stored data. Such bracketing renders the data necessary, at the appropriate moment, to reinterpret that experience. In research this may be called "count"--the event itself; "account"-the telling of the event after the fact to the interviewer; "recount"-the reinterpretation of the event after an intervening period of time (Mannheim, 1956; Driessen, 1975). The longer the intervening time, the greater the chance for a fragmentary representation of the original interpretation of the event. We may remember the "gist" of the event rather than the event's distinct details (Spiro et al., 1980).

The memory process, the creative process, and the comprehension process are identical in many ways. Both reading comprehension and memory of an

event or story involve a process of selection and verification to match our configurations and patterns of schemata as we have originally interpreted them. We try to make the pieces fit. We are information seeking and closure oriented. We desire to make sense of our lives. Consequently, teachers find it hard sometimes not to prompt students who are having reading problems.

Perception and remembering are goal directed behaviors. An example of the way in which we make sense out of what we read is my own in writing this paper. A variety of interdisciplinary methodologies were tied together. The purpose is to show the relationships between social science research, reading comprehension, and the concepts of "bracketing" and creativity. In doing so, my knowing the connections is not enough. The connections must be articulated. A SEARCH was instituted. The search involved analysis of reading theory, social science theory, the creative process, and right/left brain hemisphere research findings.

This search required a great deal of application of HIGHER LEVEL THINKING SKILLS. The problem is that I may know the theoretical framework, but the appropriate background knowledge must be available in your minds for comprehension to occur. Therefore, the concepts presented must be linked to the world each of you has experienced or imagined. We must constantly problem-solve. Schemata are central to this process. Woods, 1977, says:

> High-level perceptual tasks such as reading, speech understanding, and visual scene interpretation are characterized by the need to discover a structured interpretation that accounts for the stimuli present. This process is prerequisite to deciding what has been perceived and thus precedes whatever process decides what to do with the resulting perception--what significance to attach to it, whether to remember it, how to incorporate it into the knowledge base of the perceiver...

These reading comprehension skills are largely accomplished without conscious awareness. Great numbers of alternative hypotheses are naturally

occurring in our minds as well as interpretations and rejections and/or acceptance of these interpretations. If we are given only partial or fragmentary utterances, we must become conscious of the processing of these data, however, if we are given a larger context or a gestalt, we make interpretations quickly. We speak, interpret, understand, make inferences and sense of talk, form natural hypotheses, verify and give adequate accounts effortlessly in everyday life. Eisner has moved in his works to a holistic or formal theoretical level of analysis i.e., the levels of generalization which are conceptualized through "bracketing" and "chaining or linking" the sensory experiences of the reader to the empirical objects in their perceptual worlds (Eisner, UM, July 16, 1982c lecture). Eisner states that schooling and learning are "mind-altering events." The significance of that statement to the teaching of reading and selection of reading materials cannot be overemphasized. We can produce technicians or statesmen/women, ciminals or criminal lawyers. Behind every symbol or word there is a unique, personal meaning with a frame of reference for approaching life, value formation, research methodology, supervision, testing, grading, schooling, and cognition. Our behaviors and attitudes are built on the mental foundations acquired in our childhood.

Within reading theory the concept of "attitude" is important. Bartlett, 1982, defines "attitude" as "a general impression of the whole..feeling or affect." Bartlett is joined by other reading experts in placing an affect schema in a central position within cognitive processes (Pepper, 1942; Blumenthal, 1970; Bruner, 1962; Eisner, 1979 & 1981; Hunt, 1975 & 1982a; Ornstein, 1972).

Eisner renders the most genuine thesis concerning the affective/ cognitive processes related to the creative process. He says:

> The particular qualities of joy, grief, enchantment, irony, perserverance, or courage are never adequately revealed through the ordinary verbal classification of these terms alone...to reveal these particulars, to capture these 'essences,' one must not only perceive their existence but also be able to create a form that imitates, discloses, reveals, imparts, suggests, implies, their existence...metaphor...is a centrally important device. Metaphor breaks the bonds of conventional usage to exploit the power of connotation and analogy. It capitalizes on surprise by putting meanings into new combinations and through such combinations awakens our senses. Metaphor is the arch enemy of the stock response (Eisner, 1979).

Qualitative approaches to research are frequently discounted as imprecise. But, says Eisner, "for making public the ineffable, nothing is more precise than the artistic use of language" (Eisner, 1979). There is a distinct difference between presenting and representing a "conception or feeling." For example, he says: "Listen, listen to the bird" -- "Hark! Hark! the lark!" It is the poetic form of the latter that grabs our imagination; whereas the former is merely an ordinary, literal rendering (Eisner, 1982c).

BRACKETING, THE CREATIVE PROCESS: HOW MEANING IS BORN!

We are compelled to move to metaphor and analogy wherein the unfamiliar can be described in relationship to the familiar for the creative process to emerge. The work of Howard Gruber, professor of psychology at Rutgers, in his studies of "Breakaway Minds," renders, in support of my thesis, the following case study data (Gruber, 1981).

> Creative people have a sense of problem"bracketing;" i.e., when resolution is not eminent, they put it on hold--"bracket it"-- to pick up later.

It is the "act" of suddenly bringing together two things never chained together before. The speed of the union of ideas is significant.

Imagery is a crucial element in creativity. "Einstein at 16 imagined himself riding a beam of light... ergo ...the theory of relativity." Emphasis mine

The difference between most people and creative, imaginative ones is that the latter create new forms of imagery and use them constantly in work. It is important to note here the two original quotations given from Eisner: We desire to "enhance our perceptual fields and create new forms of anticipation."

Metaphor is used widely by all highly creative minds.

"We ought not expect creativity to be presented the same way by everyone. What attracts us...is the special thing he/she accomplished."

Commonalities among creative people: They are diversified, "cultivated, possess special skills," and the "most common quality is hard work over a long time span wherein a transformation of that person also takes place. What would be hard for others is easy for that person."

Work is play, creative people are not defined as "workaholics."

Creative people are goal directed and pursue "networks of enterprises" simultaneously by "juggling."

Creative people aren't afraid to dare, to "challenge the world... Darwin brought down the religious establishment of England."

It is not universally true that creative people are isolates. Collaborating with peers is very important.

Creative people must have the courage to change their personal worlds and say threatening ideas.

Creative readers are desired; whereas creative spellers are not. This simple insight is the sine quo non for comprehending the distinction between "hierarchical" and "heterarchical" processes. Semantic processing is often so individualistic as to be ephemeral.

When do we know that a reader has comprehended what he/she has read?

The following citation from Rumelhart offers some hope:

Thus, a reader of text is presumably constantly evaluating hypotheses about the most plausible interpretation of the text. Readers are said to have understood the text when they are able to find a configuration of hypotheses (schemata) that offers a

> coherent account for the various aspects of the text. To the degree to which a particular reader fails to find such a configuration, the text will appear disjointed and incomprehensible...Therefore, the fundamental processes of comprehension are taken to be analogous to hypotheses testing, evaluation of goodness of fit, and parameter estimation (Rumelhart in Spiro, et al., 1980).

To restate the original premise, it is my belief that the concepts of "BRACKETING AND SCHEMATA" are the necessary and sufficient binding forces which, when combined with the concepts contained within social science methodology (especially the sensitizing concept--Symbolic Interactionism), together with the acts of CHAINING, SYNAPTIC LINKING, AND THE CREATIVE PROCESS, offer a "Gestalt of Meaning Arena." This gestalt renders a promise of reconciling the mutual exclusion of "HIERARCHICAL" (skill development) and the "HETERARCHICAL" (on-going, on-the-spot) creative processes from schooling. Such an approach to comprehension and meaning provides a far broader perspective than that rendered in the past.

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PHILOSOPHICAL FOUNDATIONS: A SYNTHESIS OF PHILOSOPHY, EDUCATION, EVALUATION AND EFFECTIVE SCHOOLS AND CLASSROOMS

NOTES

The following very recent papers and book are of great significance in the content of this paper. Effective schooling, when compared with the works of William James, John Dewey, George Herbert Mead (The Chicago Tradition), and Herbert Blumer, as well as ethnomethodoligists and phenomonologists approaches in the works of Harold Garfinkel, Norman K. Denzin, Raymond L. Gold, Jon Driessen, Elliot W. Eisner, and Alfred Schutz, cannot be divorced from the assumptions underlying Symbolic Interactionism as very brilliantly stated in Blumer's article in the Symbolic Interaction Journal cited below.

David A.Squires, William G. Huitt, and John K.Segars, Effective Schools and Classrooms: A Research-Based Perspective, Alexandria, VA: Association for Supervision and Curriculum Development, 1983.

Herbert Blumer, "Going Astray With A Logical Scheme," Symbolic Interaction, Vol. 6, No. 1 (Spring 1983), pp. 123-138. Also see the other articles in this journal which deal with the comparisons of the similarities and differences between the intent of the philosophies presented in the paragraph above.

APPENDIX A

DEFINITIONS

1. BRACKETING: Formulating ideas and constructs together with typifications which allow "chunks of knowledge" to be taken in through the SENSES and then processed and refined by the person. We draw on our bracketed knowledge from stored data (schemata). To bracket is to construct and refine from stored data.

2. INDEXICAL EXPRESSIONS: These expressions first came to my attention in social science research through the work of Harold Garfinkel and my teacher Dr. Jon J. Driessen, University of Montana. In reading comprehension theory, indexical expressions fit in the realm of "pragmatics;" i.e., the study of how people behave in pre-determined ways because of the force of the linguistic context. Propositions (i.e., sentences proposed for consideration as to their truth) within sentences -- Austin, 1962 and Searle 1969-- bring this force by the way they are expressed. Indexical expressions relate knowledge, beliefs, expectations, and the intentions of the person speaking and the listener in a specific context. Mainly the expressions get their meanings from the context in which they are used.

3. PRAGMATICS: Along the same lines as "indexical expressions," work in pragmatics brought in the study of meanings which grew out of these "indexical expressions" and the implications of those propositions they represent (Grice, 1975). These meanings were subtle and implicit and were termed "conversational implicatures." Further significance has been placed on the philosophies behind context, how persons communicate in implicit ways, the intentions we covertly imply, and want the listener to know we are implying-- even though we aren't literally saying it--e.g., when a woman and man are attracted to one another, an indexical expression contained within a "speech act" (J.L. Austin, 1962; Gumperz and Hymes, 1972; Hunt, 1975 & 1979-82) for only the dyad to interpret in a non-literal manner might sound like the following: Woman's speech act: "I have been told you like turquoise jewelry Is that true?" -- Man's speech act: "If its good. I like anything that's good!" Enough said??

4. Paralleling the "research act" with "reading comprehension" STEPS: You were guided simultaneously through the specific STEPS to SYSTEMATICALLY CLASSIFY, CODE, AND MAKE INFERENCES from narrative data and the specific STEPS which READING THEORISTS present to move a learner to the point of readiness related to adequate reading comprehension. When accomplished successfully, theory is melded with practice and a new approach for the BIRTH OF MEANING IS RENDERED. NOTE :Only the FIRST STEP was presented in this paper.

5. REFERENTIAL ADEQUACY: This concept is from the works of Dr. Elliot W. Eisner, 1979, The Educational Imagination, Macmillan Co., New York. From this same source STRUCTURAL CORROBORATION is defined: These concepts are used as a means of achieving, through "thick description," an acceptable and believable personal accounting of objects, events, or phenomenon which is qualitatively different from a propositional approach in that THE CRITIC

must remain true to the meanings of those who experienced the event or phenomenon and clarify the process of teaching reading, e.g., by expressing what is happening in the process of the act within the context through thick descriptive accounts. Reliability and validity are then embedded in the skill of the "competent eye" of the evaluator.

6. SCRIPTS: Scripts are "feature detectors" and are low-level schemata which are activated by input into the SENSORY SYSTEM. These "schema-driven schemata" would then chain together with appropriate other schema and retrieve "bracketed chunks of knowledge" for 'goodness of fit' (Rumelhart in Spiro, et al., 1980). SCRIPTS can be developed for many settings (Hunt, 1975, 1982). The most frequent example of a "STANDARD FEATURE" is the reference to equipment we USED TO GET "free" when purchasing an automobile. We rarely get anything as a standard feature free now. Also see: Scripts People Live, Claude Steiner, cited in reference section of this paper.

7. EXPRESSIVE ACTIVITIES AND EXPRESSIVE OUTCOMES: See the work of Dr. Elliot W. Eisner, The Educational Imagination, 1979, Macmillan Co., Pub., New York. These concepts and behaviors are used by Eisner to bring us closer to the reality of how people really learn to comprehend what IS and IS NOT PRESENT in our educational institutions and in our world. These concepts are not pre-determined nor are they prescribed. They are different in many ways from behavioral objectives. They do not have a pre-planned question or answer. Therefore, the learner can not only make up the QUESTION drawn from his/her interests, but can RESOLVE THE PROBLEM. This moves toward diversity rather than commonality. A preset standard is no longer the basis for the quality of the work of the student.

8. THE RESEARCH ACT: The research act is a CREATIVE PROCESS which renders for the learner unique and often a publishable product. The PRIVATE SELF is made PUBLIC through these research works. Higher level thinking skills are required and one often moves from literal interpretations of phenomenon to analogy and metaphor and uses 'thick description' or rich language to report or evaluate the event or occasion under study. The outcomes are, by the nature of their creativity, frequently one of a kind--that is the MEANING OF A "BREAKAWAY MIND" as described by Howard Gruber. Norman K. Denzin is an excellent reference for learning about The Research Act (See the reference section of this paper).

9. ACTUALITIES: Things at a distance (Edward Rose, Univ. of Colorado).

10. REALITIES: Things close at hand (Edward Rose, Univ. of Colorado).

11. PROPERTY: That which belongs to the essence of a thing or object.

12. PROPOSITION: A sentence proposed for consideration as to its truth.

13. GENERIC: Natural human qualities and attributes.

14. MICRO: Small mechanical processes in reading comprehension.

15. MACRO: The wholistic arena of reading comprehension related to all human interactions.

16. CHAINING: Linking meanings together by groupings of schema into schemata which can then be taken in for hypothesis testing for goodness of fit with our natural theories in life. If accepted, these 'chunks of knowledge' form our personal realities. Such chaining and bracketing give us a stock of stored knowledge which we can draw upon when required to meet the demands of a specific setting or event.

17. EMPIRICAL REFERENT: An actual object, thing, event, occasion, or person which represents the "constructed type" (i.e., you can walk up to a learner of that type and put your hand on his/her shoulder).

18. SOCIOLINGUISTICS: The ethnography of language. The study of "speech acts" and "meanings in context." A believable STORY of an EVENT or HAPPENING.

19. SCHEMATA: Data structures for representing the generic concepts stored in "Blocks of Cognition" -- memory. Acquired through experience (Spiro, et al., 1980)

20. PLOT: The message within the discourse.

21. RHETORICAL STRATEGIES: Determination by the READER of the underlying meanings of WRITTEN DISCOURSE using surface linguistic information.

22. DISCOURSE FORCE: The perception of the READER of the INTENT of the AUTHOR.

23. EXTRA-TEXTUAL CONSTRUCTION: Communicating requires more of us than the literal words and sentences themselves. We add to the discourse using our background knowledge (Spiro, et al., 1980; Garfinkel, 1967; Eisner, 1979).

24. INSTANTIATIONS: Acceptance of truth of an interpretation after having reality tested -- hypotheses testing -- for goodness of fit and determining the clarity of the information, thus chaining to other relevant information and "bracketing."

25. "COMPETENT EYE:" Elliot W. Eisner defines the "competent eye" as, "Perception is both cognitive and transactional. Seeing is an achievement dependent upon visual literacy"(Eisner, Cognition and Curriculum: A Basis for Deciding What to Teach, New York: Longman, Inc., 1982, p. 68.

26. PLAY: "In a sense play is the ability to suspend rules in order to explore new arrangements." See: Brian Sutton-Smith, (eds.), Play and Learning, New York: Halsted Press, 1979). Fieldworkers often refer to the suspension of rules momentarily for comparative purposes as "analytical separation," or "holding a moving picture still as in a snapshot," for study.

27. THICK DESCRIPTION: Vivid adjectives and descriptive words rendering a SENSE on the part of others of their having experienced the event or happening when they have not really done so.

28. EDUCATIONAL CRITICISM: "One of the means through which the particular situation can be more effectively experienced and from which useful generalizations can be drawn." Educational criticism is a FUNCTION which can be performed by anyone...a means of "rendering" values, attitudes, perceptions, and sensitivities in an effort to improve educational processes. It is a normative frame of reference when making sense of the world. Inquiry is "contextual, dynamic, aesthetic, and value laden." pp. x-ix, The Educational Imagination, Elliot W. Eisner, Macmillan Pub. Co., New York, 1979.

29. ATTITUDE: "...attitude is a general impression of the whole... feeling or affect." (Bartlett in Spiro, et al., 1980).

30. SENSITIZING CONCEPT: Read work of Herbert Blumer, "What is Wrong With Social Theory?" Sensitizing concepts are indicators of where we may look, not absolutes or prescriptive behaviors. Sensitizing concepts render the potential for generalizatons which can be universally understood, regardless of the context (e.g., most people have experienced "fear" at sometime to some degree). These concepts offer bench marks along the paths of research.

31. HETERARCHICAL AND HIERARCHICAL: "Heterarchical" defined by the writer means original beginnings in combined forms of meaning--seminal ideas--circular for a dynamic rather than a static model, and always in-process. Happening all at once. The creative process occuring in the body, mind, and spirit. This term first came to my attention from Bobrow and Norman, 1975.

Hierarchical means happening in isolation, sequentially, and in a linear fashion following hierarchical basic steps wherein the first step is automatically thought to be encompassed in the next higher level.

32. ARTISTIC POSTURING: The concept of "artistic posturing" came to the writer while reading an article by Eisner on "Artistic Supervision." I have defined "artistic posturing" as: Sharing, learning to make decisions, developing self-esteem, acquiring higher level thinking skills (analysis, synthesis, evaluation processes), understanding, comprehension, and a sense of the aesthetic. Modeling behaviors which exemplify the aforementioned conduct in life and work. Promoting, through your own work, diversity and personal expression as outcomes of schooling and learning. Recognizing that management by objectives cannot be applied across the board for teachers or students in learning and achievement. Recognizing that "effective schooling" and "direct instruction" need to be used appropriately when needed, while keeping ever-present in our minds that we must strike a balance for learner outcomes, curriculum designs, teacher expectations, student interests, school management, organization, finances, leadership, supervision, and competency testing for both teachers and students. "Artistic Posturing" is rarely rewarded and little understood because the process requires the use of metaphor, analogy, and social science methodologies, the creative process, all of which work in partnership with educational praxis.

33. FORMAL THEORY: Formal theory as used in this paper may be found in the works of such formal theorists as Erving Goffman, Elliot W. Eisner, Raymond L. Gold, Jon J. Driessen, Barney Glaser and Anslem L. Strauss, John Gumperz and Dell Hymes, and Madgie Mae Hunt. NOTE: SYNAPTIC LINKING AND NETWORKING are the structural components of cognition, while creativity is the processual configurations.